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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended) A method for detecting an arc and protecting a load against said arc, applicable to an electric assembly of an automotive vehicle, utilizing an electronic microprocessor based system comprising:
acquiring at least two samples of the amount of current circulating through each of at least one load, calculating the average value of said acquired samples and updating said average value with the acquisition of each new sample, calculating a variable indicating an arc limit through the calculated average current value; and
disconnecting the feed from the sampled load and activating at least one alarm signal.

Claim 2 (original) A method according to Claim 1, wherein the current acquisition is carried out independently for each of said at least one load connected to said electric assembly at a position in said electric assembly prior to said at least one load.

Claim 3 (original) A method according to Claim 2, wherein said electronic system has a register of rated currents to be circulated through each of at least one of said loads determining preset current values indicating a maximum limit, a minimum limit, and an arc detection threshold for each of said at least one load.

Claim 4 (original) A method according to Claim 3, wherein said arc detection threshold and said average current value is updated with the acquisition of each additional current sample.

Claim 5 (original) A method according to Claim 4, wherein a value obtained through said calculation of said average current value for a load exceeds said maximum current limit, said load is disconnected from the feed due to the presence of one of a short circuit and a parallel arc.

Claim 6 (original) A method according to Claim 4, wherein a value obtained through said calculation of the average current value for a load channel is lower than said maximum current limit, a comparison between the instantaneous current value acquired and said minimum limit is carried out.

Claim 7 (currently amended) A method for detecting an arc and protecting a load against said arc, applicable to an electric assembly of an automotive vehicle, utilizing an electronic microprocessor based system comprising:
acquiring at least two samples of the amount of current circulating through each of at least one load, calculating the average value of said acquired samples and updating said average value with the acquisition of each new sample, calculating a variable indicating an arc limit through the calculated average current value; and
disconnecting the feed from the sampled load and activating at least one alarm signal;
wherein said current acquisition is carried out independently for each of said at least one load connected to said electric assembly at a position in said electric assembly prior to said at least one load; said electronic system having a register of rated currents to be circulated through each of at least one of said loads determining preset current values indicating a maximum limit, a minimum limit, and an arc detection threshold for each of said at least one load;
wherein said arc detection threshold and said average current value is updated with the acquisition of each additional current sample;
wherein a value obtained through said calculation of said average current value for a load channel is lower than said maximum current limit, a comparison between the instantaneous current value acquired and said minimum limit is carried out; and
~~according to Claim 6~~,
wherein ~~where~~ said comparison provides a result of the instantaneous current value acquired being greater than said minimum limit and, is also lower than said arc limit value, an internal arc pre-detection signal is activated and a value greater than zero will be sent to a counter variable accessible to said electronic microprocessor based system.

Claim 8 (original) A method according to Claim 7, where the value of the next instantaneous current acquisition results in the average current value acquired being

lower than the maximum current limit, said instantaneous current value being greater than the minimum limit, and lower than said arc limit, said load is disconnected from the feed and an internal series arc detection signal is generated.

Claim 9 (original) A method according to Claim 7, where the value of the next instantaneous current acquisition results in the average current value acquired being lower than the maximum current limit and lower than that of the minimum limit, the said internal arc pre-detection signal is deactivated and no action whatsoever is taken on the load.

Claim 10 (original) A method according to Claim 7, where the value of the next instantaneous current value acquisition results in the average current value acquired being lower than the maximum current limit, being greater than the minimum limit, greater than said arc limit, and said counter variable is not equal to zero, a unit is subtracted from said counter variable.

Claim 11 (original) A method according to Claim 7, where the value of the next instantaneous current value acquisition results in the average current value acquired being lower than the maximum current limit, being greater than the minimum limit, greater than said arc limit, and said counter variable is equal to zero, the said internal arc pre-detection signal is deactivated without carrying out any action on the load.

Claim 12 (original) A method according to Claim 3, wherein said maximum limit has a value substantially equal to about double said rated current and said minimum limit has a value substantially equal to about 10% of the rated current.

Claim 13 (original) A method according to Claim 3, wherein said maximum limit has a value greater than double said rated current and said minimum limit has a value of lower than 10% of said rated current.

Claim 14 (original) A method according to Claim 3, wherein said arc detection threshold has a value between about 0.75 and about 0.9.

Claim 15 (original) A method according to Claim 14, wherein said arc detection threshold is substantially equal to about 0.875.

Claim 16 (original) A method according to Claim 2, wherein a sensor for acquiring said current values is integrated into a Solid State Relay responsible for deactivating the load where the arc or short circuit detection is positive.

Claim 17 (original) A method according to Claim 2, wherein a sensor for acquiring said current values forms part of a shunt structure.

Claim 18 (original) A method according to Claim 2, wherein a sensor for acquiring said current values is a Hall Effect sensor.

Claim 19 (original) A method according to Claim 7, wherein said counter variable has a value equal to or greater than two.

Claim 20 (original) A method according to Claim 1, wherein said average value is updated for each new current acquisition, taking into account eight or more immediately preceding current acquisitions.

Claim 21 (original) A method according to Claim 9, wherein said average value will continue to be updated even though the current value is practically zero.

Claim 22 (original) A method according to Claim 9, where when the current of the load has a behavior similar or equal to the one controlled by PWM, said average value will not be updated as long as the current acquisitions remain below said minimum limit.